THE CONSERVATION OF *GORTYNA BORELII LUNATA* FREYER (LEP.: NOCTUIDAE)

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Summary

FISHER'S ESTUARINE MOTH *Gortyna borelii lunata* Freyer is a rare native moth, found only around the Walton Backwaters in north-east Essex. It is dependent upon hog's-fennel *Peucedanum officinale* as its sole British larval food plant. Ongoing research into the life history and ecology of the moth is described. Amid some controversy, *G. borelii* was added to Schedule 5 of the Wildlife & Countryside Act 1981 during 1998. An incident occurred in 1999 which resulted in the first action in relation to its new legal protection.

Introduction

Fisher's Estuarine Moth *G. borelii lunata* was first confirmed as a British breeding species as recently as 1971 (Fisher, 1992), when its larval workings in the roots of hog's-fennel *Peucedanum officinale* were located by the Walton Backwaters in north-east Essex. Prior to that date, only three confirmed specimens were known, all from an adjacent locality (1968-70), although there is anecdotal evidence that it may have occurred in the same area during the very early years of the twentieth century (Harwood, 1903).

Following this discovery, the British populations of its larval food plant (in Essex, Kent and, more recently, Suffolk) have been examined for the presence of *G. borelii*: so far as is known, it has only ever been found (other than as undocumented, unauthorised introductions) in the *Peucedanum* population on sea walls and coastal grassland between Walton-on-the-Naze and Dovercourt. *Peucedanum* is itself a *Red Data Book* species, which also plays host to another rare moth *Agonopterix putridella* (Oecophoridae).

A certain amount is known about the biology and ecology of *G. borelii*. It overwinters as an egg. In May, at the small larval stage, typically 70% or more of the food plants show signs of larval workings, often indicating the presence of several larvae per plant. By July, typically 30% or fewer of the plants show signs of the presence of larger larvae and, as it is a large root-borer, it is believed that each affected plant supports just one larva. The adult moth emerges in September or October; not all parts of the population is examined in every year, but the number of adults reported in any year does not generally exceed one hundred. Informed opinion, albeit with little detailed justification at this stage, suggests that the true adult population size is likely to be in the range one to five thousand. Although the moth is to be found throughout the Walton Backwaters population of hog's-fennel, including plants found on isolated islands, we have little evidence to suggest that the moth has good dispersal/colonisation powers: during the thirty years of its confirmed existence, only five moths have ever been found more that 10 metres from a food

plant, despite an array of regular moth-trapping locations within 10 kilometres of the site.

Research

The rarity and uniqueness of *G. borelii* to this part of the country led to the inclusion of action plans for both moth and food plant in the *Essex Biodiversity Action Plan*, published in March 1999. One of the key actions relating to *G. borelii*, in addition to protection of its habitat, is research - to find out more about its life-history, population biology and ecology. Such information is vital if we are to safeguard and enhance, through management, the population of Fisher's Estuarine Moth. Several research and survey programmes are under way:

- in 1997, a length of sea wall was taken out of the usual mowing regime, in response to concerns expressed by the Essex Lepidoptera Panel that mowing the whole of the sea wall in August every year was damaging to some insect populations, including *G. borelii*. The Environment Agency and English Nature co-operated in the establishment of an experiment to investigate the effects of different mowing regimes; the experiment has been monitored intensively since that time, and is likely to continue for at least two further years;
- in 1999, a contract was let by English Nature to assess the current state of the Essex hog's-fennel population;
- also in 1999, a PhD project investigating *G. borelii* was started at Writtle College, supported by English Nature, Environment Agency and Butterfly Conservation.

The results of this research will be fully disseminated through the entomological literature in due course.

Scheduling

Special protection is afforded to a select band of invertebrates through their inclusion on Schedule 5 of the Wildlife & Countryside Act 1981. Amongst other things, Section 9 of that Act makes it illegal intentionally to kill, injure, take, possess or sell any wild animal (or derivative thereof) listed on Schedule 5. Any such animal is deemed to be wild unless the contrary can be demonstrated; captive-bred stock is not wild in this context. In addition, it is illegal to damage, destroy or obstruct access to any structure or place which such an animal uses for shelter or protection, or to disturb any such animal while it is occupying a place of shelter or protection.

The inclusion of a species on Schedule 5 is not undertaken lightly. It is considered only if there is good conservation reason to do so - that is, only if there are perceived threats which may be prevented by scheduling and that failure to schedule may risk extinction of the species. English Nature has long felt that *Gortyna borelii* meets these criteria, as a result of:

- a low presumed population size and very low observed population size;

- the apparent subdivision of the population into semi-isolated smaller groups;
- depredations of collectors. The species is easily found given its reliance on one food plant, and in some years at least, the activities of collectors have been all too apparent, with hog's-fennel plants uprooted (illegally) and trampled;
- unsympathetic management regimes on the sea walls in particular;
- the very tenuous nature of the current sites, squeezed between ever-increasing sea levels and intensive agriculture.

The case was made through JNCC, and eventually accepted by DETR; Fisher's Estuarine Moth was added to Schedule 5 of the Wildlife & Countryside Act 1981 in March 1998. But this was not universally welcomed. During the DETR's consultation period, a number of representations were made against scheduling, especially from certain entomological societies. The gist of the objections were:

- scheduling would prevent or inhibit *bona fide* research which could benefit the conservation of *G. borelii*. This argument is not tenable, as there is the facility for English Nature to license such actions as necessary to further conservation of the protected species: more than one thousand licences for research on Schedule 5 species were issued by English Nature in the year to November 1999. The onus would be on the applicant to demonstrate likely conservation benefit - not an unreasonable requirement, in our opinion;
- protection of this species may undermine the statutory protection afforded to other, rarer species, as it may not be as rare and vulnerable as English Nature maintains. Evidence for the latter point was presented in Hart (1998), which stressed the wide distribution and abundance of small larvae. It must however be recognised that it is adult numbers, in particular adult females, which represent the key contribution to the next generation; in some respects, the larval numbers are irrelevant given the likely high mortality rates (both density-dependent and density-independent), through the summer. If, however, future research and survey demonstrates satisfactorily that the species is not threatened, it may be removed from Schedule 5 at one of the five-yearly reviews;
- collectors, assumed (incorrectly) to be the main target of legislative protection, are not a major factor in its rarity: inappropriate habitat management and sea-level rise are of greater significance. English Nature believes that threats to the species come from a variety of sources, all of which need to be addressed.

Sadly, one cannot help but read between the lines that an underlying reason for objections to its scheduling is that there is still a demand for wild-caught specimens, and that there is an assumption that this demand should be catered for. English Nature is not opposed to insect collection where it does not endanger the populations

of rare species. Indeed, in some cases, it is necessary, for identification and taxonomic resolution. However, there are sufficient wild-caught specimens of *G. borelii* in museums and private collections, and a ready commercial availability of captive-bred specimens, for all legitimate requirements.

Enforcement

An assumption was made when the moth became protected that the purpose was to prevent unlicensed collecting. However, the only occasion, thus far, when the law has needed to be invoked relates to damage through inappropriate habitat management works.

On 5 October 1999, I arrived at the site of the EN/EA sea wall mowing experiment to discover that a direct works team from the Environment Agency was in the process of dredging the adjacent borrow-dyke, and placing spoil upon the sea wall. Some 200 metres of spoil deposition had taken place, in three of the eight sections of the experiment. It was clear that some hog's-fennel plants had been buried, and others damaged. Reference to earlier survey work suggested that perhaps 200 large plants were in the affected area and that, just two months previously, almost 40% of these plants had shown signs of occupation by the large larvae of *G. borelii*.

From our knowledge of the life-history of the moth, we supposed that a proportion of these may have already produced flying adults, whilst others remained in or around the rootstocks as pupae: the incident occurred right in the middle of the flight-period. Those which had already emerged would already have laid eggs, again assumed to be on or close to the larval foodplant.

In the view of English Nature, an illegal act may have taken place. There was very strong circumstantial evidence that adult moths or their eggs had been killed or injured, and there was direct observational evidence that previously-occupied foodplants (a not-unreasonable interpretation of 'place of shelter or protection') had been damaged or destroyed. In accordance with our standard practice for offences under Part 1 of the Wildlife & Countryside Act, 1981, the matter was referred to the police, through the Essex Police Wildlife Liaison Officer. A full statement was prepared and referred to the Crown Prosecution Service for their advice.

In the meantime, the Environment Agency acted with commendable urgency. Top priority was to secure effective damage-limitation: the deposited material was removed carefully, following English Nature's specifications. We believe that the foodplants will recover from this trauma, but of course the fact remains that it is very likely that this generation of moths on this stretch of wall will have been adversely affected.

Serious questions were then asked as to how this damage could have occurred. As is so often the case with large organisations, it was a question of communication and consultation (or more precisely, the lack of it). Whilst the conservation section and several senior engineers were well aware of the sensitivity of the site and the presence of *G. borelii* (they had after all set up the mowing experiment with English

Nature), clearly the staff carrying out the work were not. Inasmuch as the placing of the spoil was a deliberate (though not malicious) act, we maintained that an offence may have been committed, and that the EA was therefore corporately liable. Consequently a far-reaching review of consultation and communication procedures within the Environment Agency has taken place, and it is most unlikely that such damage will occur in the future.

When the Crown Prosecution Service reported back on the case, its considered view was that the case would not be accepted for prosecution. It is their view that the evidence does not establish beyond reasonable doubt (the standard of proof required in criminal proceedings) that an offence had occurred. In respect of the possible offence under Section 9(1), this is clearly because we did not have a dead or damaged moth, larva, pupa or egg to show. Regarding the possible offence under Section 9(4), their interpretation appears to be that a place of shelter is only such when it is demonstrably in occupation. Because of uncertainties relating to the biology of the moth, we could not prove beyond reasonable doubt that the potential places of shelter were actually being used when the damage occurred. Notwithstanding the concerns that this advice undermines any protection afforded by Section 9(4), it clearly demonstrates the need for unequivocal information on biology and life history of a species such as *G. borelii*.

With some reservations, therefore, English Nature has accepted the view of the CPS, especially as all desirable conservation outcomes, in terms of site restoration and improved consultation, appear to have been achieved.

Conclusions

English Nature is serious about its responsibilities for the conservation of *Gortyna borelii lunata*. We have committed considerable resources (and will continue to do so), towards research which will inform future actions towards maintaining and enhancing the species' population. We will support and use all available enforcement procedures to implement its legal protection, not excluding prosecution of anybody – even such a valued conservation partner as the Environment Agency. We are confident that the unfortunate events of October 1999 will not be repeated, and that the future of this rare British native moth is now more assured.

References

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